

REMARKS

The Advisory Action dated November 10, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1 and 26-29 have been amended to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added. Claims 1, 2 and 4-29 are presently pending.

The Office Action indicated that claims 18-23 have been allowed. Applicants wish to thank the Examiner for the allowance of these claims. Claims 1-2, 4-17 and 24-29 are respectfully submitted for reconsideration.

In the Office Action dated July 25, 2008, claim 29 was rejected under 35 U.S.C. 112, first paragraph, because the Examiner alleged that there is no support for a computer program claim in the specification as filed. This rejection is respectfully traversed.

Referring to the present application, paragraph [0027] of the detailed description explicitly discloses that the user equipment may be a "computer." Therefore, the location estimation techniques described throughout the claims recitations may certainly be performed on a computer, and hence a computer readable medium. Withdrawal of this rejection is kindly requested.

The Office Action rejected claims 1-2, 4-17 and 24-29 anticipated by 35 U.S.C. §102(e) to Kingdon et al. (Kingdon). The Office Action took the position that Kingdon

disclosed all of the features of the claims. This rejection is respectfully traversed for at least the following reasons.

Claim 1, from which claims 2, 4-17, 24 and 25 depend, is directed to a method that includes collecting location information. The method further includes selecting at least one of a plurality of different location methods to provide a location estimate said methods comprising using cell identity information, and determining a first location estimate of a mobile device based on the at least one selected location method. The first location estimate is based on a service base transceiver station. The method also includes determining a virtual base station estimate using at least some of the collected location information. The virtual base station estimate is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The method also includes providing a second location estimate using one of said different location methods based on the first location estimate and the virtual base station estimate, said second location estimate being a location of the mobile device.

Claim 26 is directed to a system that includes collecting means for collecting location information, selecting means for selecting at least one of a plurality of different location methods to provide a location estimate said methods using cell identity information. The system further includes a location determining means for determining a first location estimate of a mobile device based on the at least one selected location method. The system also includes an estimate determining means for determining a virtual base station estimate using one of said different location methods. The virtual

base station estimate is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The system further includes providing means for providing a second location estimate based on at least one of the first location estimate, and the virtual base station estimate. The second location estimate being an estimate of the location of the mobile device.

Claim 27 is directed to a system that includes a collector configured to collect location information. A selector is configured to select at least one of a plurality of different location methods to provide a location estimate, said methods using cell identity information. A determiner is configured to determine a first location estimate of a mobile device based on the at least one selected location method. The first location estimate is based on a serving base transceiver station. The system further includes that the determiner is also configured to determine a virtual base station estimate that is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The system also includes a provider configured to provide a second location estimate, using one of said different location methods based on the first location estimate and the virtual base station estimate. The second location estimate being an estimate of the location of the mobile device.

Claim 28 recites an apparatus that includes a collector configured to collect location information. The apparatus also includes a selector configured to select at least one of a plurality of different location methods to provide a location estimate. The methods using cell identity information. The apparatus also includes a determiner

configured to determine a first location estimate of the apparatus based on the at least one selected location method. The first location estimate being based on a serving base transceiver station. The apparatus is also configured to determine a virtual base station estimate based on the first location estimate of the mobile device and direction information of the serving base transceiver station. The apparatus also includes a provider configured to provide a second location estimate, using one of the different location methods based on the first estimate and the virtual base station estimate. The second location estimate is an estimate of the location of the apparatus.

Claim 29 recites a computer program embodied on a computer readable medium, the computer program configured to control a processor to perform certain operations. Those operations include collecting location information. Other operations include selecting at least one of a plurality of different location methods to provide a location estimate. The location methods using cell identity information. The operations also include determining a first location estimate of a mobile device based on the at least one selected location method. The first location estimate being based on a serving base transceiver station. Other operations include determining a virtual base station estimate using at least some of the collected location information. The virtual base station estimate is determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station. Further operations include providing a second location estimate using one of said different location methods based

on the first location estimate and the virtual base station estimate. The second location estimate is a location of the mobile device.

As will be discussed below, the teachings of Kingdon fail to disclose or suggest all of the elements of the claims, and therefore fails to provide the features discussed above. The rejection is respectfully traversed for at least the following reasons.

Kingdon discloses a method for positioning a mobile station 290 using two base stations 320 and 340 (see FIGS. 2 & 3). In operation, when the MS 290/310 is to be positioned, the mobile network 200 will receive a positioning request from some entity operating within the mobile network 200. The request is relayed to the BSC 270 serving the MS 290 or 310. Then, the system attempts to locate the two most suitable BTSs so that a triangulation may be performed. A time advance parameter (TA) is calculated for each BTS and is forwarded to a master positioning center (MPC) 295, which determines the MS 310 distance from each of the BTSs (see column 5, line 50 through column 6 line 13).

Referring to column 6, lines 30-32 of Kingdon, the timing advance (TA) measurements for the mobile station are measured at two known and real base stations (BTS 120 and serving BTS 110) actively participating in the communications of the mobile network 200. The timing advance parameters and the cell identifiers of the base stations are used to position the mobile station based on one of two areas that correspond to a distance equivalent to the TA measurement from each base station. In order to determine which of the two base stations provides the correct location of the mobile

station, the serving base station sector is determined. The serving base station BTS 110 is the real and actual serving base station that is used in the initial position determination.

However, Kingdon does not teach or suggest, at least, “determining a first location estimate of a mobile device...said first location estimate being based on a serving base transceiver station” and “determining a virtual base station...said virtual base station estimate being determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station”, as recited, in part, in independent claim 1 and similarly in independent claims 26-29. Applicants submit that the base stations disclosed in Kingdon (e.g., BTSs, BSCs, etc.) all must be real base stations and cannot be interpreted as being virtual base stations. Additionally, there is no disclosure of determining the virtual base station estimate based on a first location estimate of the mobile device and direction information of the serving base transceiver station.

Page 2 of the Advisory Action alleged that the “virtual base station” is not explained in sufficient detail so as to distinguish it from a real base station (Please see paragraph 3, which notes the comments regarding “the broad scope of the claim language”). Applicants have amended each of the rejected independent claims 1 and 26-29 to recite that the virtual base station is “determined based on the first location estimate of the mobile device and direction information of the serving base transceiver station.” The virtual base station is not the mobile device or the base transceiver station. Furthermore, the virtual base station is not part of the base transceiver station, but,

instead is determined to have a location that is based on information estimated location information of the mobile device and the base transceiver station.

Referring to pages 82-85 of the Applicants' specification, examples are provided that describe the "first location estimate", and "the virtual base station estimate". For instance, pages 83 and 84 disclose how the first location estimate is actually a location estimate of the mobile device based on the serving base transceiver station. This first estimate is referred to as the "RX location estimate" (see line 15 of page 84 and the three paragraphs prior thereto). The next estimate is a direction location estimate that is based on a signal direction from a serving BTS, and is referred to as "RX direction location estimate" (see lines 16-23 of page 84).

As noted above, the virtual base station estimate is described as being based on both of the above-noted estimates (e.g., "the first location estimate" and "the virtual base station estimate"). To the contrary, Kingdon is referring to the serving sector as the only source of information for locating the mobile device (see column 7, lines 40-50 of Kingdon). Kingdon does not disclose determining a first location estimate of the mobile device based on the serving sector, and, in turn, using that information for determining a virtual base station so that another (i.e., "second") location estimate may be obtained. All of the various timing advance (TA) parameters and location estimates disclosed in Kingdon are all derived from traditional actual base stations, especially, the serving base station.

In addition to the above-noted deficiencies of Kingdon, Applicants note the arguments submitted on paragraph 3, page 2 of the Advisory Action. Specifically, it was alleged that a virtual base station could be considered a “sector” or could be represented by “sector information.” Applicants submit that this argument is flawed as a “sector” of an existing base station cannot be considered a virtual base station that is different from another base station (i.e., base transceiver station). A sector by its very definition is a portion of a greater part. A sector of the base transceiver station is part of the same base transceiver station. Regardless of any past interpretation of the pending claims, Applicants submit that the currently pending claims clearly recite that the virtual base station estimate is based on a location estimate of a mobile terminal and direction information of the base transceiver station, neither of which represents a “sector” of the base transceiver station.

Therefore, for at least the reasons stated above, Kingdon fails to teach all of the subject matter recited in independent claims 1 and 26-29. By virtue of dependency, claims 2, 4-17 and 24-25 are also allowable over Kingdon. Withdrawal of the rejection of claims 1, 2 and 4-17 and 24-29 is kindly requested.

Applicants respectfully submit that each of claims 1, 2, 4-29 are in condition for allowance. Accordingly, it is respectfully requested that each of claims 1, 2, and 4-29 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



Kamran Emdadi
Registration No. 58,823

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Vienna, Virginia 22182-6212
Telephone: 703-720-7800
Fax: 703-720-7802

KE:sjm

Enclosures: RCE
Petition for Extension of Time
Check No. 20178